

Remarks/Arguments

Favorable consideration of this application in light of the following discussion is respectfully requested.

Claims 3, 4, and 11 are pending in the application, with Claims 3 and 11 amended by the present preliminary amendment.

In the outstanding Office Action, Claims 3-4 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee et al. (U.S. Patent No. 6,288,493) in view of Holland et al. (U.S. Patent No. 5,800,619); and Claims 3-4 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee et al. (U.S. Patent No. 6,288,493) in view of Hemker et al. (U.S. Publication No. 2004/0011467, hereinafter Hemker).

Applicants acknowledge with appreciation the personal interview between the Examiner and Applicants' representative on November 9, 2004. During the interview, various clarifying amendments to the claims were discussed in view the Holland and Hemker references. The Examiner indicated that rejection based on Lee and Holland might be withdrawn in view of a re-reading of Holland's disclosure of coils in other planes.

Claims 3 and 11 are amended to recite that the radii of the coils disposed on a common plane have adjustable radii. Support for this amendment is found in Applicants' originally filed specification.¹

Briefly recapitulating, Claim 3 is directed to a power supply antenna, comprising at least two coils disposed concentrically and having adjustable radii. The at least two coils comprise a plurality of conductors bent into a form of an arc, and power supply portions formed at opposite ends of the respective coils so as to be connected to a high frequency power source. The power supply portions are located in different phases on a common plane. The power

supply antenna also includes another coil disposed on a plane parallel to the common plane. By placing another coil in a plane parallel to the common plane that contains the at least two coils located in the common plane, heating distribution of the plasma can be shaped to achieve a uniform absorption distribution and/or intensification.² By having the radii of the coils being adjustable, the radial distribution of the electromagnetic wave absorption can be flattened.³

Lee discloses an antenna device with three coaxial coil antennas disposed in a common plane.⁴ However, as noted in the Official Action, Lee does not disclose or suggest a third coil disposed on a plane parallel to at least two coaxial coils on a common plane, as recited in Applicants' Claims 3 and 11. Lee also does not disclose or suggest Applicants' claimed adjustable radii.

Holland discloses an "electric source [including a] substantially planar coil 24, usually mounted immediately above window 19"⁵ and alternative embodiments that include "positioning the coils... in many different planes above window 19."⁶ However, contrary to the Official Action, Holland does not disclose that a coil disposed on a plane that is parallel to a plane that contains two or more other coils as recited in Applicants' Claims 3 and 11. In Applicants' invention, the respective coils are arranged parallel to one another, where the vertical distance L between the coils is predetermined to vary mutual inductances so that the distribution of energy absorbed to the plasma is adjusted. By being able to vary mutual inductances (by adjusting a distance L between the coils), an optimum energy distribution can be obtained in an improved and easy-to-control manner. However, the coils of Holland are not disposed on parallel planes. Holland explicitly describes that the outer and inner portions of

¹ Specification, page 27, lines 2-16, Figures 9a-9d.

² Specification, page 26, lines 13-20.

³ Specification, page 27, lines 12-16.

⁴ Lee, Figure 5.

⁵ Holland, column 7, lines 2-8.

the coils are at different heights about the window 19.⁷ Furthermore, Holland does not describe concentric coils whose radii is adjustable as recited in amended Claims 3 and 11.

Applicants therefore submit that neither Lee nor Holland disclose or suggest all the elements recited in Applicants' claimed inventions. Thus, Applicants request the rejection of Claims 3 and 11, and all claims depending therefrom, in view of Lee and Holland be withdrawn.

Hemker discloses an RF antenna having a cylindrical plasma chamber 106 which is a 3-D, stacked configuration employed to promote azimuthally symmetric coupling.⁸ Inductances between the coils are adjusted by varying the DC current to the electromagnetic coils 104.⁹ However, like Lee and Holland, Hemker fails to disclose or suggest concentric coils with adjustable radii as recited in amended Claims 3 and 11.

Because none of the cited prior art, individually or in combination, disclose or suggest all the elements of independent Claims 3 and 11, Applicants submit the inventions defined by Claims 3 and 11, and all claims depending therefrom, are not rendered obvious by the asserted prior art for at least the reasons stated above.¹⁰

⁶ Holland, column 14, lines 10-12.

⁷ Holland, column 14, lines 12-24.

⁸ Hemker, paragraph [0051]; [0058]; Figure 1.

⁹ Hemker, paragraph [0054].

¹⁰ MPEP § 2142 "...the prior art reference (or references when combined) must disclose or suggest **all** the claim limitations. The disclosing or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."

Accordingly, in light of the previous discussion, Applicants respectfully submit that the present application is in condition for allowance and respectfully request an early and favorable action to that effect.

Respectfully submitted,

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